Los Alamos analysis of San Juan Generating Station carbon-capture study shows promise

December 13, 2019

A team of Los Alamos scientists and engineers conducted an independent assessment of a carbon-capture technology study on the San Juan Generating Station

At the request of the U.S. Department of Energy, a team of Los Alamos scientists and engineers conducted an independent assessment of a carbon-capture technology study on the San Juan Generating Station, a coal-fired power plant in the Four Corners region of New Mexico.

Recent upgrades at the plant involved installation of new environmental controls for emissions-related sulfur oxides, nitrogen oxides and mercury. Now interest has turned to the plant's emissions of carbon dioxide. Thus, the company Enchant Energy has proposed to partner with the city of Farmington to retrofit the facility with technology to capture up to 90 percent of the carbon dioxide emissions in the flue gas.

This project would represent the third demonstration in North America of post-combustion carbon capture technology at a coal-fired power plant, which has been the focus of extensive research and technology development by the U.S. Department of Energy's Office of Fossil Energy.

The pre-feasibility study proposed the use of commercially available amine-based systems to capture the CO2 from the flue gas, followed by transporting the CO2 via pipeline for use in enhanced oil recovery. The Los Alamos team found that the proposed plan to use an amine-based capture system is a technically viable option that could reliably capture 90% of the emissions from flue gas that it processes.

The Los Alamos team also assessed factors associated with the proposed use of CO2 and concluded that there was sufficient subsurface capacity and likely to be sufficient future demand to handle all of the projected captured CO2, but the team also identified potential opportunities for CO2 use and storage in the Four Corners region. Finally, the Los Alamos team identified additional factors that could be considered in the future, including more detailed engineering analyses.


NNSA
National Nuclear Security Administration